

# Crowell's Greenhouse

By Peter S. Frank

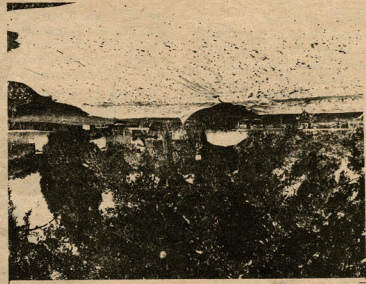
When you think of energy you might consider natural gas, oil, and nuclear power. There is however, a cleaner and cheaper source of fuel. That one economical energy source is none other than mother nature's very own heater — the sun. That elliptical yellow orb reaches internal temperatures of 1,000,000 degrees centigrade. If you could collect three days worth of direct sunlight you would have enough energy to equal all of the earth's known reserves of coal, oil, and natural gas. If your energy ravenous country could just harness some of that power there would not be an energy shortage.

One professor here at St. Lawrence has decided to put some of the sun's power into use. Dr. Crowell of the Biology Department has constructed a passive solar greenhouse onto his home. This 12' x 12' addition cost him a mere \$700.00 dollars. This cost represents labor costs and materials. The Government will give him a tax break on the structure. With the addition of this passive greenhouse, Dr. Crowell hopes to put his plants seven months ahead of the North Country growing season.

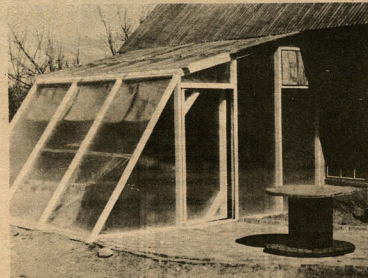
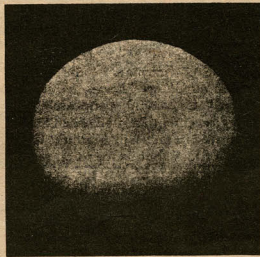
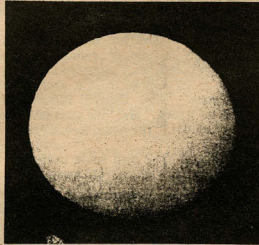
When considering solar power one should realize there are two types used in the home sector — Active Solar systems and Passive Solar Systems. These are not to be confused with the solar system, with the Northern lights, etc. In a Passive System, solar heat is used directly to supply energy. There are a variety of collecting devices on the market all of which are used to collect the rays of the sun. A typical passive solar project will have no windows to the north, a large array of windows to the south and will face as directly south as possible. All windows and doors will be air tight. The sun's rays go through the windows. There they are absorbed by solar collectors. These collectors are usually columns of rock or holding tanks filled with water. When the sun goes down or is obscured by clouds shades are drawn to contain the heat inside the structure. A passive solar greenhouse works extremely well as a collection area for solar energy. If done properly it can cut fuel bills entirely in an area like L.A., or up to 43 percent in an area such as Madison, Wisc.

The other way to use solar energy and save money involves the use of Active solar collectors. This system utilizes the use of solar collecting panels or evacuated tubes. These are mounted to

the roof of a structure for maximum light access. The sun bombards the collectors and sends heat coarsing into the veins of the system. Once in the veins of the system a fan or pump pushes the heat into solar collectors. Once again rocks or water are used as the collectors. The latent heat properties of water allow it to be one of the best insulators known to man. This system is more complex than a passive system and tends to cost more. A moderate sized American home would cost approx. \$5,000 dollars to equip with an active solar program.



An example of a Solar Greenhouse



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spinach, chard, green peas. These plants are unheard of during the snow covered winter months of the North Country.

The Crowell greenhouse adheres to all of the classic rules of architecture. It follows all three rules of architect Frank Lloyd Wright because it is structurally sound, highly functional, and pleasing to the eye. The addition faces 15 degrees west of south out of the Crowell home. It rests on an energy efficient foundation of interchanging layers of cement and styrofoam. The outside walls of the addition are floor-to-ceiling double pane windows which allow maximum lighting and efficiency. The structure is roofed with three solar panels. The inside of the greenhouse is floored by slate tiles which slope to a drainage pipe. On one of the inside walls a sink has been installed for plant care. The most noticeable aspect of the greenhouse is its 5 sixty-five gallon collecting tanks. These tanks are so efficient that the Crowell's were able to eat brunch in the greenhouse while outdoor temperatures were ten and fifteen degrees.

Dr. Crowell is quite pleased at this point in the life of his greenhouse. Operation of the passive system is going well and at this point all that needs to be done to keep the system running is closing shades and filling the water columns. Dr. Crowell said he liked the system for the following reasons: "It's nice because I can open the door to the kitchen and heat that room from the heat of the greenhouse." It's usually ten to fifteen degrees warmer out in the greenhouse. "Since it is warmer out there we like to have our lunches out here as well, especially in the winter".

Besides heating the house it is also nice to get so far ahead of the growing season. Dr. Crowell is also considering expanding his solar project so that it might heat the rest of his home. With tax breaks and different grants available it is definitely an attractive alternative energy source.

Energy prices will not be going down with our present energy producing systems. Solar energy provides one possible alternative to our energy burdened society.

Dr. Crowell has found a way to help relieve his energy consumption and thus save money. During our crazy times it is nice to see people in the North Country building productive things like Solar Greenhouses!

In the Crowell family they had been considering a greenhouse for about three years. Mrs. Crowell did some research about greenhouses and a decision was made to go to a passive energy system. Dr. Crowell felt that sort of a system would use minimum amounts of energy. The only energy expenditures involve closing the energy saving shades and filling the water of the solar collecting tanks. Construction was started last year by a carpenter friend of the Crowell's and was completed by Christmas. This allowed for the growing of exotic plants such as